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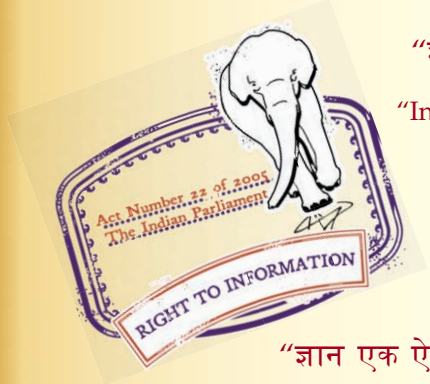

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"Knowledge is such a treasure which cannot be stolen"

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IS : 5558 - 1970
(Reaffirmed 2000)

Indian Standard

SPECIFICATION FOR CHICKEN ESSENCE

UDC 664·87 : 637·547·1

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 1

September 1970

Indian Standard

SPECIFICATION FOR CHICKEN ESSENCE

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Indian Standard

SPECIFICATION FOR CHICKEN ESSENCE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 25 February 1970, after the draft finalized by the Meat and Meat Products Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Chicken essence is prepared from whole dressed chickens (*see* IS : 4674-1968*) by partial hydrolysis along with the boiled water extract and concentrated under vacuum. The concentrated extract is further sterilized and the fat, if any, is removed. The concentrate is further processed and clarified to meet the prescribed requirements of nitrogen, total solids, etc. The required sweetening and flavouring agents are added and the product is packed in hermetically sealed ampoules.

0.3 The demand for chicken essence is increasing considerably both from the civilian population and from the defence personnel. This standard is being formulated in order to ensure that the production of chicken essence is up to a quality level that is acceptable to the consumers and feasible for the manufacturers.

0.4 In the preparation of this standard, due consideration has been given to the provisions of the Prevention of Food Adulteration Act, 1954, and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under the Act wherever applicable.

0.5 This standard contains clauses **4.1.2** and **G-3.2** which call for agreement between the purchaser and the vendor.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Specification for dressed chicken.

†Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for chicken essence.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definition shall apply.

2.1 Chicken Essence — A liquid extract containing the hydrosoluble extractives of chicken flesh and free from any preservative, added-gelatin and micro-organisms.

3. REQUIREMENTS

3.1 Hygienic Requirements — The material shall be prepared and handled under strict hygienic conditions by persons free from contagious and infectious diseases and only in premises maintained in a thoroughly clean and hygienic condition and having adequate and safe water supply (*see* IS : 2491-1963*) and duly approved and licensed by the public health authorities concerned. All workers shall use clean and washed clothings. Necessary precautions shall be taken to prevent incidental contamination of the product from soiled equipment or from personnel suffering from injuries.

3.1.1 All equipment coming in contact with raw materials or products in the course of manufacture shall be kept clean. An ample supply of steam and water, hose, brushes and other equipment necessary for proper cleaning of machinery and equipment shall be available. The equipment may be sterilized by immersion in or swabbing with hypochlorite or other suitable chlorine solution.

3.2 Processing Requirements — Healthy chickens shall be dressed, extracted with hot distilled water, concentrated to desired volume, clarified properly after rendering it fat-free, adjusted to proper solid and nitrogen content, filtered, filled in clean ampoules, sealed and sterilized.

3.3 Finished Product Requirements

3.3.1 *Physical Requirements* — The finished product shall be clear and without any sediment. It shall have a characteristic taste and odour of chicken essence. The setting time at $-10°C$ shall not be more than $1\frac{1}{2}$ hours when tested by the method given in Appendix A.

*Code for sanitary conditions for food processing units.

3.3.2 The product shall also comply with the chemical and microbiological requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR CHICKEN ESSENCE

Sl No.	Characteristic	Requirement	Method of Test (Ref to Appendix
(1)	(2)	(3)	(4)
i)	Total solids, percent by weight	10 to 12	B
ii)	Protein content, percent by weight	8 ,, 10	C
iii)	Chloride content, percent by weight	0·15 ,, 0·20	D
iv)	*p*H	5·8 ,, 6·2	E
v)	Sterility test	To pass the test	F

4. PACKING AND MARKING

4.1 Packing

4.1.1 The material shall be packed in hermetically sealed ampoules.

4.1.2 The ampoules shall be packed in suitable cartons. The number of ampoules in each carton shall be subject to agreement between the purchaser and the vendor.

4.2 Marking — The ampoules shall be marked by labelling on the containers themselves or as agreed to between the purchaser and the vendor. The marking or the label shall give the following information:

a) Name of the material along with brand name, if any;

b) Name and address of the manufacturer;

c) Net weight of the contents;

d) Batch number in code;

e) Names of the ingredients; and

f) Licence number given by the health authorities.

4.2.1 Each container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and

supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING

5.1 The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in Appendix G.

6. TESTS

6.1 Tests shall be carried out as prescribed in the appropriate appendices given under col 4 of Table 1.

6.2 Quality of Reagents — Unless specified otherwise, pure chemicals shall be employed in tests and distilled water (*see* IS : 1070-1960*) shall be used where the use of water as a reagent is intended.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

APPENDIX A
(*Clause* 3.3.1)

DETERMINATION OF SETTING TIME

A-1. APPARATUS

A-1.1 Bath — made of suitable material for holding ice-salt freezing mixture.

A-1.2 Thermometer — calibrated 10° to 110°C.

A-1.3 Watch

A-2. PROCEDURE

A-2.1 Break the ice into pieces and mix common salt with it, and place it in the tub. Maintain the temperature of ice-salt mixture at below − 10°C. Place 5 ampoules in the bath and note the time. Also

*Specification for water, distilled quality (*revised*).

note the time separately when the contents of each of 5 ampoules form a jelly. The ampoules should form a transparent solid jelly without any separation of solids or appearance of turbidity.

APPENDIX B

[*Table* 1, *Item* (i)]

DETERMINATION OF TOTAL SOLIDS

B-1. APPARATUS

B-1.1 Flat-Bottom Dishes — of nickel or other suitable material and with cover. Dishes should not be affected by boiling water. They may be 7 to 8 cm in diameter and not more than 2·5 cm deep. They should be provided with short glass stirring rods having a widening flat end.

B-1.2 Well-Ventilated Oven — maintained at 100° ± 2°C.

B-2. PROCEDURE

B-2.1 Weigh accurately about 5 g of the sample into a flat-bottom glass or china or aluminium dish (with a cover) previously dried and weighed. Heat the dish containing the material after uncovering in an oven maintained at 100° ± 2°C for about 5 hours. Cool in a desiccator and weigh with the cover on. Repeat the process of drying, cooling and weighing at half-hourly intervals, until the difference between two consecutive weighings is less than 2 mg. Record the lowest weight.

B-3. CALCULATION

B-3.1 Total solids, percent by weight $= \frac{100\,(W_2 - W)}{(W_1 - W)}$

where

W_2 = weight in g of dried sample with the dish,

W = weight in g of empty dish, and

W_1 = weight in g of sample with the dish.

APPENDIX C

[*Table* 1, *Item* (ii)]

DETERMINATION OF PROTEIN

C-1. KJELDAHL METHOD

C-1.1 Apparatus — A recommended apparatus, as assembled, is shown in Fig. 1. The apparatus consists of a round-bottom flask *A* of 1 000 ml capacity fitted with a rubber stopper through which passes one end of the connecting bulb tube *B*. The other end of the bulb tube *B* is connected to the condenser *C* which is attached by means of a rubber tube to a dip tube *D* which dips into the liquid contained in beaker *E* of 250 ml capacity.

C-1.2 Reagents

C-1.2.1 *Concentrated Sulphuric Acid* — sp gr 1·84.

C-1.2.2 *Copper Sulphate*

C-1.2.3 *Potassium Sulphate or Anhydrous Sodium Sulphate* — nitrogen-free.

C-1.2.4 *Sodium Hydroxide Solution* — Dissolve about 225 g of sodium hydroxide in 500 ml of water.

C-1.2.5 *Standard Sodium Hydroxide* — approximately 0·1 N.

C-1.2.6 *Standard Sulphuric Acid* — approximately 0·1 N.

C-1.2.7 *Methyl Red Indicator* — Dissolve 1 g of methyl red in 200 ml of rectified spirit, 95 percent (*v/v*).

C-1.3 Procedure — Transfer carefully about 0·5 g of accurately weighed material to the Kjeldahl flask. Add 25 ml of concentrated sulphuric acid through the neck of the flask so that it washes the material, if any, sticking to the sides of the flask. Add about 0·2 g of copper sulphate into the flask. Place the flask in an inclined position. Heat below the boiling point of the acid until frothing ceases. Add about 10 g of potassium sulphate. Increase heat until acid boils vigorously and digest for 30 minutes after the mixture becomes clear and pale green or colourless. Wash down particles, if any, sticking to the sides with the minimum quantity of concentrated sulphuric acid and continue digestion for 60 to 90 minutes. Cool the contents of the flask. Transfer quantitatively to the round-bottom flask *A* and dilute to 250 ml. Add with shaking a few pieces of pumice stones to prevent bumping.

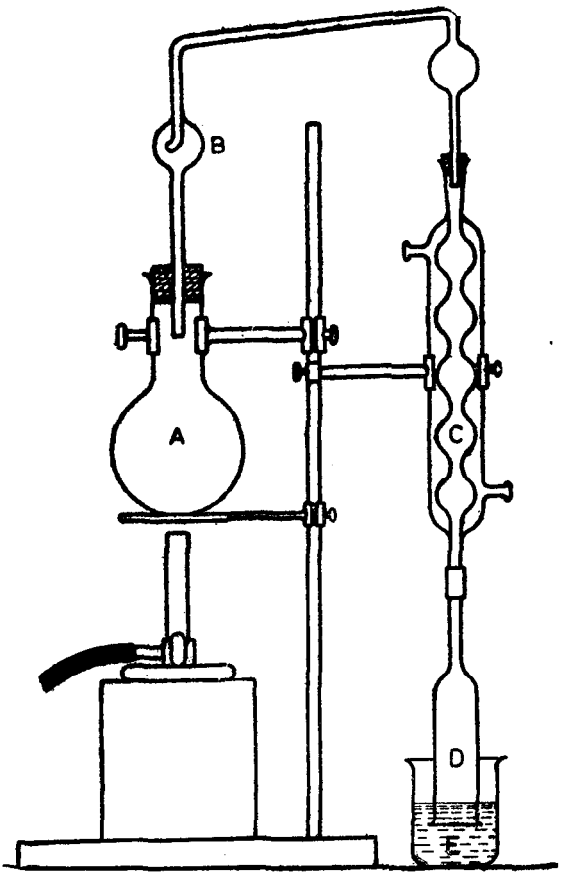

FIG. 1 APPARATUS FOR THE DETERMINATION OF PROTEIN

Add about 50 ml of sodium hydroxide solution or more (which is sufficient to make the solution alkaline) carefully through the side of the flask, so that it does not mix at once with the acid solution but forms a layer below it. Assemble the apparatus as shown in Fig. 1, taking care that the tip of the condenser extends below the surface of a known quantity of standard sulphuric acid contained in the beaker *E*. Mix the contents of the flask by shaking and distil until all ammonia has passed over into the standard sulphuric acid. Detach flask *A* from the condenser and shut off the burner. Rinse the condenser thoroughly with water into the beaker *E*. Wash the dip tube *D* carefully so that

all traces of condensate are transferred to the beaker. When all the washings have drained into the beaker *E*, add two or three drops of methyl red indicator and titrate with standard sodium hydroxide solution.

C-1.3.1 Carry out a blank using all reagents in the same quantities and with 0·5 g of sucrose in place of the material.

C-1.4 Calculation — Protein is calculated by multiplying nitrogen content by the factor 6·68, as follows:

$$\text{Protein, percent by weight} = \frac{0{\cdot}014\,(B - A)\,N}{W} \times 100 \times 6{\cdot}68$$

where

B = volume in ml of standard sodium hydroxide solution used to neutralize the acid in the blank determination,

A = volume in ml of standard sodium hydroxide solution used to neutralize the excess of acid in the test with the material,

N = normality of standard sodium hydroxide solution, and

W = weight in g of the material taken for the test.

APPENDIX D

[*Table* 1, *Item* (iii)]

DETERMINATION OF CHLORIDE CONTENT

D-1. REAGENTS

D-1.1 Silver Nitrate Solution — approximately 0·05 N.

D-1.2 Concentrated Nitric Acid — sp gr 1·42.

D-1.3 Standard Potassium Thiocyanate Solution — 0·05 N, standardized against standard potassium chloride or sodium chloride.

D-1.4 Saturated Iron Alum Solution — in 10 percent nitric acid, prepared by boiling excess of iron alum, cooling and filtering.

D-2. PROCEDURE

D-2.1 Place 1 g of the prepared sample, accurately weighed in a 250-ml Erlenmeyer flask. Mix with it 10 ml of silver nitrate solution. Add 10 ml of concentrated nitric acid and digest the whole until reddish brown fumes are evolved. Add one millilitre of saturated iron alum solution. Determine the excess of silver nitrate by titrating with the standard potassium thiocyanate solution, until the first appearance of an orange tint that persists for 15 seconds.

In the same manner, determine the volume of the standard thiocyanate solution equivalent to 10 ml of silver nitrate using the same volumes of reagents and water.

D-3. CALCULATION

D-3.1 Chlorine, percent by weight $= 0{\cdot}017\ 73\ (B - A)$

where

B = volume in ml of the standard potassium thiocyanate solution required by the blank, and

A = volume in ml of the standard potassium thiocyanate solution required by the sample.

APPENDIX E

[*Table* 1, *Item* (iv)]

DETERMINATION OF *p*H

E-1. ELECTROMETRIC METHOD

E-1.1 Apparatus

E-1.1.1 *p*H *Meter*

E-1.2 Reagents

E-1.2.1 *Standard Potassium Hydrogen Phthalate Buffer* (*p*H 4·0) — Dissolve 10·12 g of dried potassium hydrogen phthalate in water and dilute to 1 litre.

E-1.3 Procedure — Determine *p*H of the sample, using glass-calomel electrode system. Follow instructions issued by manufacturer of potentiometer used. Check *p*H meter before and after use against standard potassium hydrogen phthalate buffer. Report the results to nearest 0·05 *p*H.

APPENDIX F

[*Table* 1, *Item* (v)]

TEST FOR STERILITY

F-0. PRINCIPLE

F-0.1 Tests for sterility are based upon the principle that if bacteria are placed in a medium which provides nutritive material and water, and kept at a favourable temperature, the organisms will grow, and their presence will be indicated by a turbidity in the originally clear medium.

F-1. GENERAL

F-1.1 The test for sterility comprises: (a) detection of aerobic and anaerobic organisms; and (b) detection of fungi.

F-2. DETECTION OF AEROBIC AND ANAEROBIC ORGANISMS

F-2.1 Reagents

F-2.1.1 *Medium for Aerobic Organisms* — The medium either consists of meat extract containing a suitable concentration of peptone or is prepared by the enzymic digestion of protein material. After the final sterilization, the alkalinity of the medium lies between the limits represented by *p*H 7·2 and *p*H 7·8, except where otherwise stated.

F-2.1.2 *Medium for Anaerobic Organisms* — The medium is similar to that for aerobic organisms, with the addition of either (a) sufficient heat-coagulated muscle to occupy a depth of at least 1 cm at the bottom of the container, or (b) about 0·05 percent of agar together with other suitable substance which may decrease the oxidation-reduction potential of the final medium sufficiently to permit the growth of obligate anaerobic organisms, an oxidation-reduction potential indicator such as resazurin sodium may be added. After final sterilization, the alkalinity of the medium lies between the limits represented by *p*H 7·2 and *p*H 7·8. Before the sample to be tested is added, the medium is heated at 100°C for sufficient time to free it from dissolved oxygen, and cooled.

F-2.2 Procedure — Inoculate 100 mg of media for aerobic organisms and for anaerobic organisms with 2 ml of the contents of each sealed container to be tested. Incubate the inoculated media between 30°C and 32°C for seven days. The product shall pass the test if a growth of micro-organisms does not occur in any tube before the end of seven days. If growth occurs, fresh material may be taken and the test

repeated, and, if necessary, this may be done a third time. The product shall fail to pass tests if growth occurs in each of the three tests, or if a growth of the same organisms occurs in more than one test.

F-3. DETECTION OF FUNGI

F-3.1 Reagents

F-3.1.1 *Fluid Sabouraud Medium*

Dextrose	20 g
Pancreatic digest of casein	5 g
Peptic digest of animal tissue	5 g
Water	1000 ml

Dissolve the dextrose, the pancreatic digest of casein, and the peptic digest of animal tissue in the water with the aid of gentle heat. Adjust the medium with 1 N sodium hydroxide solution so that, after sterilization, it will have a *p*H of 5·7 + 0·1. Filter, if necessary; place in culture tubes, and sterilize at 121°C for 20 minutes. The autoclave temperature should be reached within ten minutes.

F-3.2 Procedure — Inoculate 15 ml of sabouraud medium with 1 ml of the contents of each sealed container to be tested. Incubate the inoculated medium between 22° to 25°C for not less than ten days. When the material to be tested renders the medium turbid so that it is not possible to determine the presence or absence of growth readily by visual examination, transfer suitable portions of this turbid medium between the third and seventh days after the test is started. Incubate both the original and transfer tubes for seven to eleven days. Examine all tubes during and at the end of the incubation period. When evidence of growth is observed within two days, check the tubes showing such evidence by microscopic examination of stained smears or by transferring to a suitable medium. If on the first test no growth is found the material under examination meets the requirements of the absence of contamination with fungi. If growth is found, the test may be repeated to rule out laboratory contamination which may be introduced during the test, using twice the number of samples. If repeated tests confirm the presence of contamination due to fungi, the sample shall fail to pass the test.

APPENDIX G
(*Clause* 5.1)

SAMPLING OF CHICKEN ESSENCE

G-1. GENERAL REQUIREMENTS

G-1.0 In drawing, preparing, storing and handling the samples, the following precautions and directions shall be observed.

G-1.1 The sampling instrument shall be sterile, clean and dry when used.

G-1.2 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers from adventitious contamination.

G-2. SCALE OF SAMPLING

G-2.1 Lot — In any consignment, all the containers of the same size and from the same batch of manufacture shall be grouped together to constitute a lot.

G-2.1.1 Samples shall be tested for each lot for ascertaining the conformity of the material to the requirements of this standard.

G-2.2 The number of containers to be selected from the lot shall depend on the size of the lot and shall be as given in Table 2.

TABLE 2 SCALE OF SAMPLING
(*Clauses* G-2.2 *and* G-2.3)

No. of Ampoules in the Lot N	No. of Ampoules to be Selected n
(1)	(2)
101 to 300	9
301 ,, 500	12
501 ,, 1 000	15
1 001 and above	21

NOTE — Up to 100, the sample size may be as agreed to between the purchaser and the vendor.

G-2.3 These containers shall be selected at random from the lot and to ensure the randomness of selection, a random number table as agreed to between the purchaser and the vendor shall be used. In case such a table is not available, the following procedure shall be adopted:

Starting from any container, count them as 1, 2, 3, ..., etc, up to r in one order, where r is the integral part of N/n (N being the total number of cartons in the lot and n the number of ampoules to be chosen). Every rth container thus counted shall be separated until the requisite number of ampoules is obtained from the lot to give the samples for test.

G-2.3.1 In addition to the containers selected according to **G-2.3**, 6 containers shall be selected from each lot at random for bacteriological requirements.

G-3. TEST SAMPLE AND REFEREE SAMPLE

G-3.1 The containers selected according to **G-2.3** and **G-2.3.1** shall be divided into three equal sets and labelled with all the particulars of sampling, one of these sets of samples shall be for the purchaser, another for the vendor and the third for the referee.

G-3.2 Referee Sample — The referee sample consists of a set of sample containers for general and chemical tests (*see* **G-2.3**) and a set of sample containers for sterility test (*see* **G-2.3.1**). These containers shall bear the seals of the purchaser and the vendor (or their representatives) and shall be kept at a place as agreed to between the two.

G-4. NUMBER OF TESTS

G-4.1 Tests for general requirements, for total solids, protein and chloride shall be made on the set of individual sample containers selected according to **G-2.3**.

G-4.2 Coliform count test requirement shall be conducted on the individual sample containers selected according to **G-2.3.1**.

G-5. CRITERION FOR CONFORMITY

G-5.1 The lot shall be decided as conforming to the specification if the test samples taken in **G-4.1** and **G-4.2** satisfy the corresponding requirement.

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(*Page* 4, *clause* **3.1.1**) — Insert the following clause after **3.1.1**:

'**3.1.2** Quality of water used for processing shall conform to IS 4251 : 1967†'.

(*Page* 4, *footnotes*) — Insert the following footnote at the end:

'†Quality tolerances for water for processed food industry.'

(FAD 18)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 APRIL 2011
TO
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[*Page* 5, *clause* **4.2**(c)] — Substitute 'Net quantity of the contents;' *for* 'Net weight of the contents;'.

[*Page* 5, *clause* **4.2**(f)] — Insert the following at the end:

'g) Any other marking required under the *Standards of Weights and Measures (Packaged Commodities) Rules*, 1977, and the *Prevention of Food Adulteration Act,* 1954 and the Rules framed thereunder.'

(FAD 18)

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